



GB00/4288

PCT/GB 00 / 0 4 2 8 8

08 NOVEMBER 2000



INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport

South Wales
NP10 8QQ

11 DEC 2000

WIPO

PCT

PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

4

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed *Andrew Gersey*
Dated 17 November 2000

BEST AVAILABLE COPY

11 NOV 1999

11NOV99 E490890-3 D01038

P01/7700 0.00-9926599 The Patent Office

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference AJC/P602/44387/JA

2. Patent application number
(The Patent Office will fill in this part)

9926599.3

3. Full name, address and postcode of the or of each applicant (underline all surnames)

THE KENDALL COMPANY (UK) LIMITED
2 ELMWOOD,
CHINEHAM BUSINESS PARK, BASINGSTOKE,
HAMPSHIRE. RG24 8WG

Patents ADP number (if you know it)

7777196001

If the applicant is a corporate body, give the country/state of its incorporation

UNITED KINGDOM

4. Title of the invention

ANKLE FOOT ORTHOSIS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

WITHERS & ROGERS
GOLDINGS HOUSE
2 HAYS LANE
LONDON. SE1 2HW
ENGLAND

Patents ADP number (if you know it)

1776001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

-

-

-

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

-

-

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

YES

ANKLE FOOT ORTHOSIS

5 This invention relates to an ankle foot orthosis intended to support the lower leg, ankle and foot. Such an orthosis may be required in order to counteract the effects of muscular and nervous disorders.

10 Conventional orthoses provide a rather rigid strut or frame which is fixed to the lower leg and foot in order to counter the effect of e.g. muscle spasms therein. When fitted, the patient may be able to walk whereas without an orthosis, walking may be almost impossible.

15 A traditional orthosis is somewhat bulky, and may require the wearing of special clothing and shoes. An additional and significant disadvantage is that a normal walking gait cannot be obtained due to the inevitable immobilisation of at least part of the ankle joint.

20 WO-A-9834572 proposes an ankle/foot orthosis having a rigid strut connecting a lower leg support to a sole plate. The strut is generally inflexible, but the sole plate is said to have sufficient flexibility to improve the walking gait by permitting bending of the toes.

25 According to the present invention there is provided an ankle/foot orthosis comprising a strapping member for a lower leg, and having an inflexible anterior longitudinal stiffener, a sole plate, and a relatively flexible strut connecting the longitudinal stiffener and the sole plate, the strut extending to the sole plate at the outer side thereof, and anterior of the position of the ankle.

30 Such an orthosis permits a degree of ankle flexibility, which promotes a more normal walking gait.

The stiffener is preferably on the inside of the strapping member, and in a preferred embodiment resides in a channel formed therein. The channel is preferably open at the bottom.

- 5 Other features of the invention will be apparent from the following description of a preferred embodiment, shown by way of example only in the accompany drawings in which:

10 Figure 1 is a side elevation of the lower leg and foot of a human, to which an orthosis according to the invention has been attached;

Figure 2 is a front elevation of an unattached orthosis corresponding to Figure 1; and

15 Figure 3 is a graphical representation showing the gait provided by the invention.

With reference to the drawings, an orthosis 10 comprises a strapping member 11 of thermoplastic and typically having a thickness of 2.5mm. This member is sufficiently rigid to be self-supporting in a shape conforming approximately to the front and side contours of a human leg 12. The member is also mouldable by the application of heat, for example from a hot air gun, in order to obtain a good fit around a patient's leg. The sides of the supporting member are cut away to improve comfort, leaving four strapping regions which extend further round the leg. On the left side of Figure 2 (as viewed) simple buckles 13 are attached by fabric loops 14 and rivets 15. On the right side, fabric straps 16 having inner end and outer end areas 17, 18 covered with the different components of a suitable hook and loop type of fastener. The straps 16 are also attached by rivets 15.

Moulded within the member 11 is a channel 19 open at the bottom and generally aligned with the shin bone.

30

Closely fitting within the channel 19 is a stiffener 21 of carbon fibre reinforced resin. Typically the stiffener has a width of about 26mm, and a thickness of 3mm.

To attach the orthosis, straps 16 are passed through the buckles 13, and the portions 18 laid over the portions 17 to the required degree of tightness. The straps 16 may finally be trimmed to a reasonable length.

- 5 Figure 3 shows a graphical representation of the gait of a typical wearer of the preferred embodiment. The 'X' axis shows time in seconds, and the 'Y' axis shows percentage of body weight. This gait approximates closely to a normal gait, the first peak indicating a distinct heel strike, and the second peak indicating a distinct toe strike. The forces generated approach those of a normal gait thus giving the user the appearance of
- 10 walking normally. The overall time for a step at normal walking pace is about the same as for an undisable person, thus permitting an approximately even walking pace where only one leg of the person requires support.

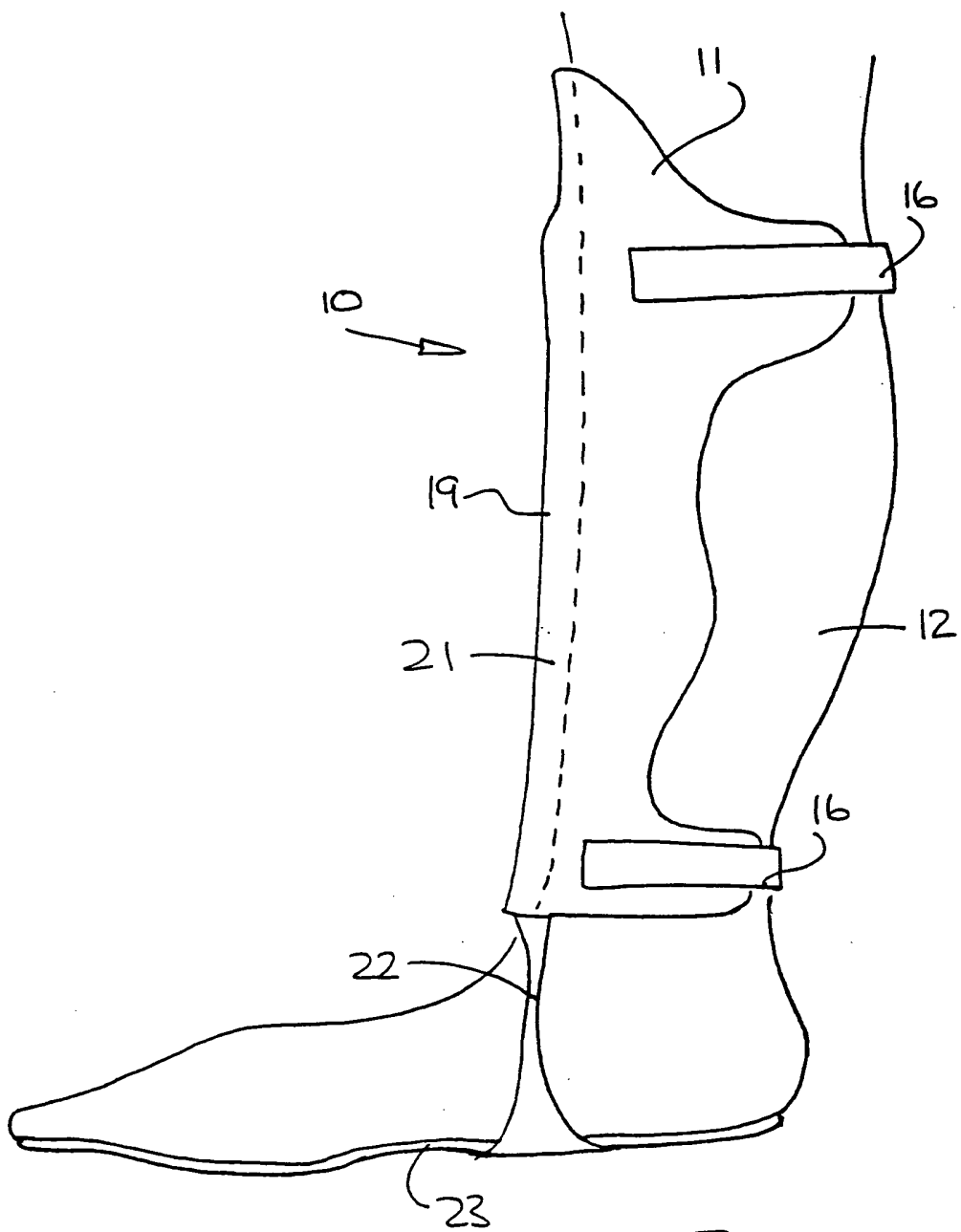


Fig 1

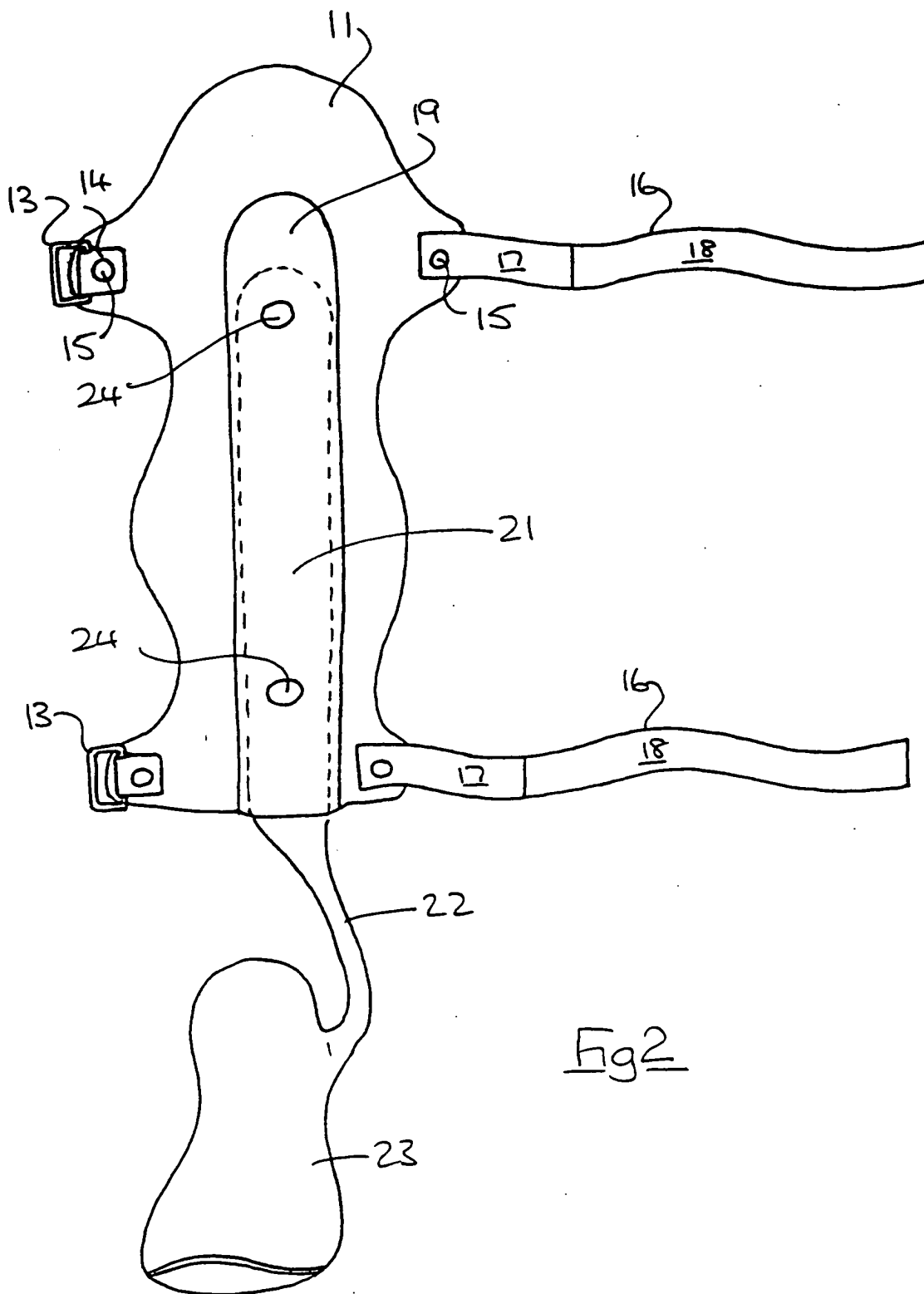


Fig 2

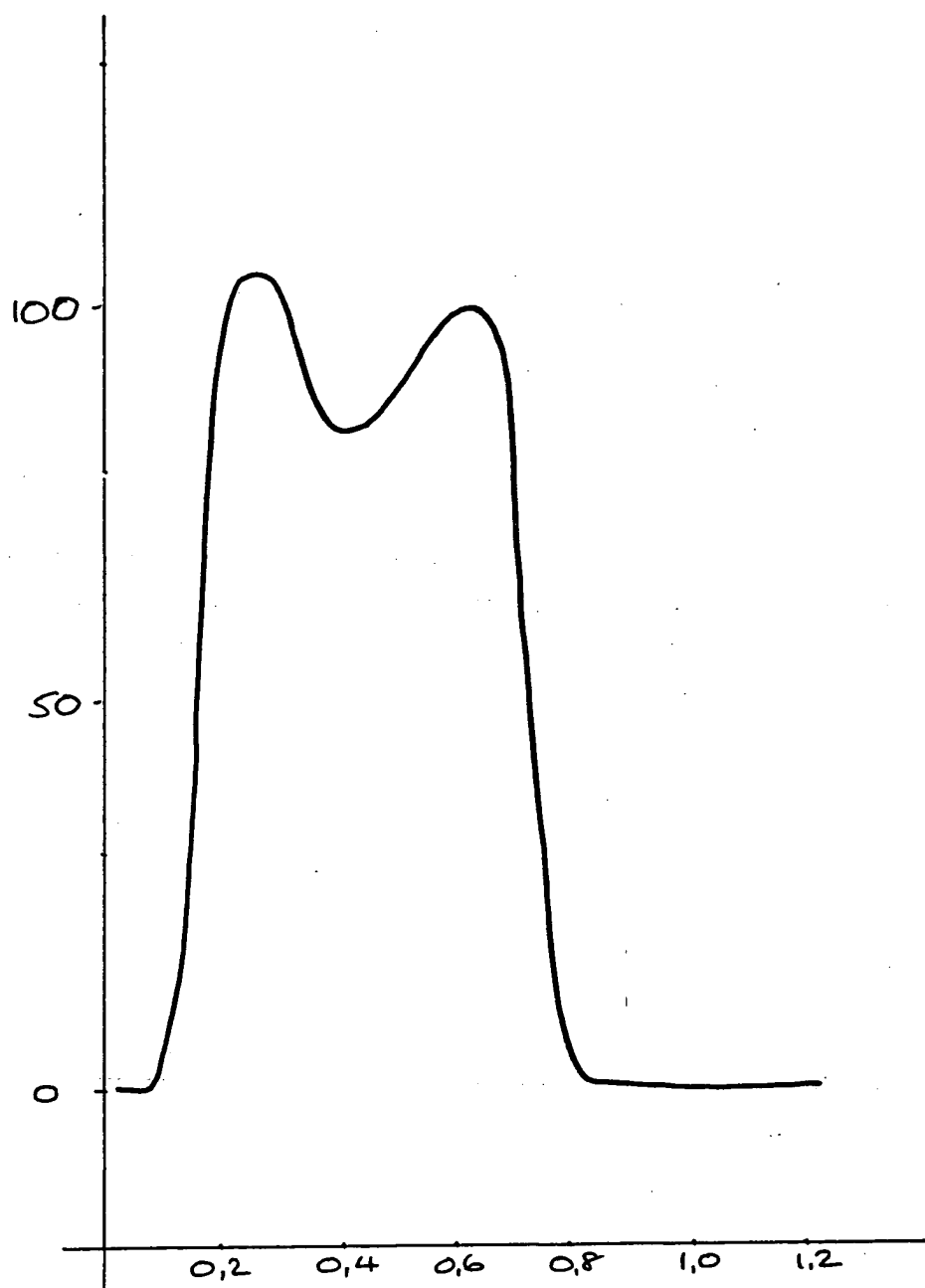


Fig 3

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

THIS PAGE BLANK (USPTO)